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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* WOLFGANG EIS and LOTHAR WILLMES

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Appeal 2008-2521  
Application 10/770,617  
Technology Center 1700

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Decided: July 31, 2008

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Before CHUNG K. PAK, CATHERINE Q. TIMM, and  
JEFFREY T. SMITH, *Administrative Patent Judges*.

PAK, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1, 3 through 27, and 29. Claims 30 through 45, the other claims pending in this application, stand withdrawn from consideration by the Examiner. We have jurisdiction pursuant to 35 U.S.C. § 6.

We AFFIRM.

*STATEMENT OF THE CASE*

The subject matter on appeal is directed to an apparatus for producing optical fibers from preforms (Spec. 6 and 29). According to Appellants, the apparatus includes, *inter alia*, a furnace containing heating bushes, which are used to heat preforms as they are passed through diffusers (orifices) to draw optical fibers. (*Id.* at 1 and 10-12). The heating bush is defined as having at least one heating element and at least one diffuser (orifice). (*Id.* at 11). Although Appellants' Figure 3 illustrates a separately activatable heating coil covering the wall of the diffuser (orifice) as a preferred heating element, the Specification as a whole does not limit the claimed heating element to such heating coil. *See, e.g.*, Spec. 11:1-5.

To organize the heating bushes in the claimed matrix configuration, the heating bushes are arranged in "a predetermined offset angle in relation to one another." (*Id.* at 7). This arrangement allows greater glass fiber production because more heating bushes can be placed per a given area of a plate due to a "small offset distance from one another." *Id.*

Further details of the appealed subject matter are recited in representative claims 1, 11, and 14 and are reproduced below:

1. A device for producing optical glass fibers, comprising:

a fiber furnace having heating bushes disposed as a matrix configuration for simultaneously receiving a number of preforms, said matrix configuration having mutually parallel first matrix axes and mutually parallel second matrix axes disposed at an angle  $\alpha$  of less than  $90^\circ$  with respect to one another, and each of said first matrix axes intersecting each of said second matrix axes within a boundary of said matrix configuration, and said heating bushes being disposed at respective crossing points of said first and second axes;

a follow-up device configured to hold and feed the preforms into said heating bushes;

a drawing and sizing installation configured to receive glass fibers drawn from the preforms in said heating bushes such that the glass fibers lie next to one another as a band when being received by said drawing and sizing installation; and

a making-up device configured to receive the glass fibers from said drawing and sizing installation.

11. A device for producing optical glass fibers, comprising:

a fiber furnace having heating bushes disposed as a matrix configuration for simultaneously receiving a number of preforms, each of said heating bushes having at least one heating element and each of said heating bushes having at least one diffuser provided between said at least one heating element and a respective one of the preforms for diffusing a heating radiation, said matrix configuration having mutually parallel first matrix axes and mutually parallel second matrix axes disposed at an angle  $\alpha$  of less than  $90^\circ$  with respect to one another and said heating bushes being disposed at respective crossing points of said first and second axes;

a follow-up device configured to hold and feed the preforms into said heating bushes;

a drawing and sizing installation configured to receive glass fibers drawn from the preforms in said heating bushes such that the glass fibers lie next to one another as a band when being received by said drawing and sizing installation; and

a making-up device configured to receive the glass fibers from said drawing and sizing installation.

14. A device for producing optical glass fibers, comprising:

a fiber furnace having heating bushes disposed as a matrix configuration for simultaneously receiving a number of preforms, each of said heating bushes having a respective flow device configured for creating a laminar air flow in each of said heating bushes, said matrix configuration having mutually parallel first matrix axes and mutually parallel second matrix axes disposed at an angle  $\alpha$  of less than  $90^\circ$  with respect to one another and said heating bushes being disposed at respective crossing points of said first and second axes;

a follow-up device configured to hold and feed the preforms into said heating bushes;

a drawing and sizing installation configured to receive glass fibers drawn from the preforms in said heating bushes such that the glass fibers lie next to one another as a band when being received by said drawing and sizing installation; and

a making-up device configured to receive the glass fibers from said drawing and sizing installation

As evidence of unpatentability of the claimed subject matter, the Examiner has relied upon the following references:

Holschlag	3,304,163	Feb. 14, 1967
Sanghera	5,735,927	Apr. 7, 1998
Watts	4,204,852	May 27, 1980
Gouronnec	4,373,943	Feb. 15, 1983
Jensen	5,062,876	Nov. 5, 1991
Oh	6,053,013	Apr. 25, 2000
Ishihara	2002/0078715 A1	Jun. 27, 2002
Lee	2003/0079501 A1	May 1, 2003

The Examiner has rejected the claims on appeal as follows:

- 1) Claims 1, 3-11, 18-19, 21-23, 27, and 29 under 35 U.S.C. 103(a) as unpatentable over Gouronnec alone, or over the combined disclosures of Gouronnec, Watts, or Jensen;
- 2) Claims 1 and 12 under 35 U.S.C. 103(a) as unpatentable over the combined disclosures of Sanghera, Gouronnec, Watts, Jensen, and Ishihara;
- 3) Claims 1, 11, 13-17, and 24 under 35 U.S.C. 103(a) as unpatentable over the combined disclosures of Sanghera, Gouronnec, Watts, and Jensen;
- 4) Claims 1, 18, and 20 under 35 U.S.C. 103(a) as unpatentable over the combined disclosures of Oh, Gouronnec, Watts, and Jensen; and
- 5) Claims 25 and 26 under 35 U.S.C. 103(a) as unpatentable over Lee or over the combined disclosures of Gouronnec, Watts, Jensen, Holschlag, and optionally Watts.

The Appellants appeal from the Examiner's decision rejecting the claims on appeal under 35 U.S.C. § 103(a)<sup>1</sup>.

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<sup>1</sup> Appellants also appeal a rejection of claims 1, 3-27, and 29 under 35 U.S.C. § 112, second paragraph, set forth in the Final Office Action dated 6 February 2007. (Br. 8). However, the Examiner withdrew this rejection in the Examiner's Answer dated 19 December 2007. (*Compare* Br. 8 with Ans. 2). Therefore, this rejection is moot.

#### PRINCIPLES OF LAW

Under 35 U.S.C. § 103, the factual inquiry into obviousness requires a determination of: (1) the scope and content of the prior art; (2) the differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) secondary considerations, if any. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). “[A]nalysis [of whether the subject matter of a claim would have been obvious] need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007).

#### RELEVANT FACTUAL FINDINGS, ISSUES, AND ANALYSES

*Rejection (1): Claims 1, 3-11, 18-19, 21-23, 27, and 29*<sup>2</sup>

Appellants do not dispute the Examiner's finding that Gouronnec teaches an apparatus for producing optical glass fibers comprising a fiber furnace having heating bushes defined by four heated bores; the claimed follow up device for introducing the preforms into the heating bushes; the claimed drawing and sizing installation for drawing glass fibers; and the claimed making-up device for receiving the glass fibers from the drawing and sizing installation. (*Compare Ans. 4-7 with Br. 17-38*).

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<sup>2</sup> Appellants base their arguments for patentability solely on the limitations of claims 1 and 11. Therefore, we select claims 1 and 11 as the representative claims consistent with 37 C.F.R. § 41.37(c)(1)(vii) (2005).

Appellants' principal contention is that the applied prior art references do not teach or suggest the claimed arrangement of heating bushes as required by claims 1 and 11. (Br. 18-19).

Thus, the dispositive question for this rejection is whether Appellants have shown reversible error in the Examiner's determination that Gouronnec alone, or in combination with Jensen, teaches or would have suggested disposing heating bushes at the crossing points of "mutually parallel first matrix axes and mutually parallel second matrix axes disposed at an angle  $\alpha$  of less than 90° with respect to one another" as recited by claims 1 and 11. On this record, we answer this question in the negative.

As indicated *supra*, Gouronnec teaches a furnace for producing optical glass fibers comprising bores 58 (orifices) heated by a heating body 56 (i.e., the material surrounding the orifice). Notwithstanding Appellants' arguments to the contrary (Br. 18-19), we determine that Gouronnec suggests positioning these heating bores 58 (orifices) at the crossing points of mutually parallel first matrix axes and mutually parallel second matrix axes.

Gouronnec illustrates in Figs. 2A and 3B that heating bores 58 (orifices) are positioned, when viewed from an appropriate angle, in a square matrix orientation having two rows and two columns. Two rows of heating bushes form the mutually parallel first matrix axes: (1) one running from the top left heating bore 58 (orifice) to the top right heating bore 58 (orifice) and (2) the other running from the bottom left heating bore 58 (orifice) to the bottom right heating bore 58 (orifice). Three diagonal rows of heating bushes form the mutually parallel second matrix axes: (1) one running

diagonally from the top left heating bore 58 (orifice) to the bottom right heating bore 58 (orifice); (2) one running diagonally through the top right heating bore 58 (orifice); and (3) one running diagonally through the bottom left heating bore 58 (orifice). This arrangement meets the claimed matrix configuration because the claimed axes can be defined by any series of locations of the heating bores as is apparent from Fig. 2 of the subject application. This is especially true in this case since the Examiner has correctly found at pages 3 and 4 of the Answer that Gouronnec would have suggested, *inter alia*, a square matrix configuration having four rows and four columns of heating bores 58 (orifices). (Gouronnec, col. 3, ll. 62-68).

Thus, we concur with the Examiner that Gouronnec itself would have suggested forming heating bores 58 (orifices) at the crossing points of the mutually parallel first matrix axes and mutually parallel second matrix axes as required by claims 1 and 11.

Even if we were to determine that Gouronnec alone would not have suggested arranging such heating bores 58 positioned in the claimed manner, which we do not, the outcome of this case would not be altered.

Jensen, like Gouronnec and Appellants, teaches an apparatus for producing optical glass fibers comprising heating orifices or tips, which are located in plate 13 (known as a "bushing") for heating multiple preforms as they are passed through, for example, the heating orifices (heating diffusers) to draw optical fibers. (*Compare* Spec. Fig. 2 and Gouronnec col. 4, l. 64 to col. 5, l. 5 *with* Jensen, Fig. 4, item 17, Fig. 7, item 2, and col. 1, ll. 10-53 and Spec. Figs. 2 and 3 and p. 33). Jensen's electric heating causes plate 13 and the walls defining the orifices (diffusers) in the plate to function as a

heating means for preforms passing through the orifices. (Jensen, col. 4, ll. 43-55). These heating walls defining the orifices are embraced by the claimed heating element. (*Compare* Jensen, col. 4, ll. 43-55 *with* Spec. 11).

Like Appellants, Jensen teaches that these heating orifices are positioned "in adjacent rows [and] are staggered with respect to one another. . . [to] minimiz[e] the pitch (18) between adjacent rows as well as the pitch (19) between adjacent tips [orifices] in the same row." (*Compare* Spec. 7 *with* Jensen col. 1, ll. 45-53 and col. 5, ll. 25-30). Jensen's arrangement of heating orifices (bushings) in the claimed configuration is said to allow increased glass fiber production. (Jensen, col. 1, ll. 45-52).

Thus, we agree with the Examiner that one having ordinary skill in the art would have been led to provide the heating bushes taught by Gouronnec in the claimed manner, with the reasonable expectation of successfully increasing the production of the optical glass fibers.<sup>3</sup>

Accordingly, based on the factual findings set forth in the Answer and above, we affirm the Examiner's decision rejecting claims 1, 3-11, 18-19, 21-23, 27, and 29 under 35 U.S.C. § 103(a).

*Rejection (2): Claims 1 and 12<sup>4</sup>*

Appellants again contends (Br. 27-29) that the applied prior art references do not teach or suggest the claimed arrangement of heating

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<sup>3</sup> We note that a discussion of Watts and official notice at pp. 4, 9-10, and 15-16 in the Answer is unnecessary to resolve the issue raised.

<sup>4</sup> Appellants base their arguments for patentability solely on the limitations of claim 1. Therefore, we select claim 1 as the representative claim consistent with 37 C.F.R. § 41.37(c)(1)(vii) (2005).

bushes as required by claims 1 and 11. Thus, based on the same findings and conclusions set forth above, we agree with the Examiner that Gouronnec and Jensen would have rendered the subject matter recited in claims 1 and 12 obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103(a).

*Rejection (3): Claims 1, 11, 13-17, and 24<sup>5</sup>*

Having already addressed the arguments repeated by Appellants in connection with the Examiner's rejection of claims 1 and 11, we focus on Appellants' additional argument that the prior art does not teach or suggest heating bushes capable of providing laminar air flow as required by claim 14. (Br. 29-32).

Thus, the dispositive question for this rejection is whether Appellants have shown reversible error in the Examiner's determination that Gouronnec and/or Jensen teach or would have suggested "each of said heating bushes having a respective flow device configured for creating a laminar air flow in each of said heating bushes" as required by claim 14. On this record, we answer this question in the negative.

As our reviewing court stated in *In re Schreiber*:

A patent applicant is free to recite features of an apparatus either structurally or functionally. *See In re Swinehart*, 58 C.C.P.A. 1027, 439 F.2d 210, 212, 169 USPQ 226, 228 (CCPA 1971) ("[T]here is nothing intrinsically wrong with [defining something by what it does rather than what it is] in drafting patent claims."). Yet, choosing to

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<sup>5</sup> Appellants base their arguments for patentability solely on the limitations of claims 1, 11, and 14. Therefore, we select claims 1, 11, and 14 as the representative claims consistent with 37 C.F.R. § 41.37(c)(1)(vii) (2005).

define an element functionally, i.e., by what it does, carries with it a risk. As our predecessor court stated in *Swinehart*, 439 F.2d at 213, 169 USPQ at 228:

where the Patent Office has *reason to believe* that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on.

128 F.3d 1473, 1478 (Fed. Cir. 1997) (emphasis added).

Here, Appellants admit that laminar flow is a function of "the size of the fiber/preform and other parameters [e.g., the flow rate of the air and the size of the heating orifice]." (Br. 33). Implicit in this statement is that the laminar flow is obtained by the orifice structure (a plate having a top and bottom surface defining the openings of the orifices) taught or suggested by Gouronnec and/or Jensen, with an appropriately sized fiber/preform and/or an appropriate flow rate of the air. Thus, we determine that the orifice structure taught or suggested by Gourronec and/or Jensen is capable of providing the claimed function, a laminar flow, as required by claim 14. On this record, Appellants have not demonstrated that the orifice structure taught or suggested by Gouronnec and/or Jensen does not possess the claimed functional characteristic of the broadly claimed apparatus.<sup>6</sup>

Accordingly, based on the factual findings set forth in the Answer and above, we affirm the Examiner's decision rejecting claims 1, 3-11, 18-19, 21-23, 27, and 29 under 35 U.S.C. § 103(a).

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<sup>6</sup> We note that a discussion of Sanghera and Watts is unnecessary to resolve the issue raised.

*Rejection (4): Claims 1, 18, and 20<sup>7</sup>*

Appellants rely on the same arguments set forth in pages 17 through 27 of the Brief in connection with the Examiner's rejection of independent claim 1 discussed above. (Br. 29-32). Thus, based on the same findings and conclusions set forth above, we agree with the Examiner that Gouronnec and Jensen would have rendered the subject matter recited in claims 1, 18, and 20 obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103(a).<sup>8</sup>

*Rejection (5): Claims 25 and 26<sup>9</sup>*

Appellants have not provided any specific arguments directed to the limitations recited in dependent claim 25. Rather, Appellants rely on the same arguments set forth in pages 17 through 27 of the Brief in connection with the Examiner's rejection of independent claim 1 discussed above. (Br. 27-29). Thus, based on the same findings and conclusions set forth above, we agree with the Examiner that Gouronnec and Jensen would have rendered the subject matter recited in claims 25 and 26 obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103(a).<sup>10</sup>

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<sup>7</sup> Appellants base their arguments for patentability solely on the limitations of claim 1. Therefore, we select claims 1 and 11 as the representative claims consistent with 37 C.F.R. § 41.37(c)(1)(vii) (2005).

<sup>8</sup> We note that a discussion of Oh and Watts is unnecessary to resolve the issue raised.

<sup>9</sup> Appellants base their arguments for patentability solely on the limitations of claim 25. Therefore, we select claim 25 as the representative claims consistent with 37 C.F.R. § 41.37(c)(1)(vii) (2005).

<sup>10</sup> We note that a discussion of Watts and Ishihara is unnecessary as these prior art references are cumulative to Gouronnec and Jensen.

*ORDER*

The decision of the Examiner is affirmed.

*TIME PERIOD*

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

tf/ls

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